QC ABSTRACT

AND

QC REPORT

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QC ABSTRACT

NAME OF WORK: Improvements to Compound Wall and Park Developments in Ward No.05.

SL NO	Item Of Work	Name of Test	Frequency of Test/Quantity	Executed Quantity	Number of Tests Required	Number of Tests Conducted
		Materials				
1	Cement	Fineness by dry sieving	One Test		1	1
		Finess by Air permeablity method	One Test		1	1
		Density	One Test		1	1
		Standard Consistency	One Test		1	1
		Initial Setting time	One Test		1	1
		Final Setting time	One Test		1	1
		Soundness (Le Chatelier's Method)	One Test		1	1
		Compressive Strength	One Test		1	1
2	Coarse aggregate(40 mm down size)	SIEVE ANALYSIS	One Test		1	1
		Flakiness Index	One Test		1	1
		Elongation Index	One Test		1	1
		Specific Gravity	One Test		1	1
		Bulk Density(Loose)	One Test		1	1
		Bulk Density(Compacted)	One Test		1	1
		Water Absorption	One Test		1	1
3	Coarse aggregate(20 mm down size)	SIEVE ANALYSIS	One Test		1	1
		Flakiness Index	One Test		1	1
		Elongation Index	One Test		1	1
		Specific Gravity	One Test		1	1
		Bulk Density(Loose)	One Test		1	1
		Bulk Density(Compacted)	One Test		1	1
		Water Absorption	One Test		1	1
		Aggregate crushing Value	One Test		1	1
		Aggregate Impact Value	One Test		1	1
4	Fine aggregate	SIEVE ANALYSIS	One Test		1	1
		Water Absorption	One Test		1	1
		Specific Gravity	One Test		1	1
		Material finer than 75 micron	One Test		1	1
5	Block(400*200*200)	BLOCK DENSITY	One Test		1	1
		WATER ABSORPTION	One Test		1	1
		DIMENSION ANALYSIS	One Test		1	1
		COMPRESSIVE STRENGTH	One Test		1	1
6	Kerb	Core Compressive strength	One Test		1	1
		Corrected Cylinder Compressive strength	One Test		1	1
		Equivalent Cube Compressive strength	One Test		1	1
7	Precast (100mm)	Core Compressive Strength	One Test		1	1
		Corrected Cylinder Compressive Strength	One Test		1	1
		Equivalent Cube Compressive Strength	One Test		1	1
8	RCC(M20)	Compressive Strength(7days and 28days)	1set /1-5 cum	1.56	2	2
9	Paver Block	Compressive Strength	One Test		1	1
		Water Absorption	One Test		1	1

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TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID : CP-2020-01-31-91 **Date: 26-12-19**

Project Name : Improvements to Compound Wall and Park Developments in Ward No.05.

Agency : Executive Engineer, Karnataka Rural Infrastructure Development Ltd, #280, 59th Cross Road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560010

Customer's Reference : BBMP/EE/BTP/WO/178/2019-20

Date of Receipt : 24-12-19

Sample Type : Birla Super 53grade

Reference to BIS codes : IS 12269 2013, 53 Grade Ordinary Portland cement Specification ,
IS 4031 (Part 1,2 3,4,5, 6,11) 1988
IS 4031 Part 1 DETERMINATION OF FINENESS BY DRY SIEVING, Clause 4 4
IS 4031 Part 2, Determination of Fineness by Blaine Air Permeability Method, Clause 5
IS 4031 Part 3, Determination of Soundness, Clause 5,Clause 6
IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5
IS 4031 Part 5, Determination of Initial & Final Setting Time, Clause 5
IS 4031 Part 11,DETERMINATION OF DENSITY , Clause 6

Date of test : 24-12-19

Environmental Conditions during test : Temperature: 26°C
Humidity 72%

SLNo.	Physical properties	Results	Requirement as per IS 12269: 2013
1	Fineness by dry sieving (%)	1.95	_
2	Finess by Air permeablity method (m^2/kg,Min)	285.4	225m^2/kg, Min
3	Density (gm/cc)	3.12	_
4	Standard Consistency (%)	29.5%	Not specified
5	Initial Setting time	145 minutes	Not less than 30 minutes
6	Final Setting time	240 minutes	Not more than 600 minutes
7	Soundness (Le Chatelier's Method)	1.5mm	Not more than 10 mm

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TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID	:	**CP-2020-01-31-91** **Date: 21-01-20**
Project Name	:	Improvements to Compound Wall and Park Developments in Ward No.05.
Agency	:	Executive Engineer, Karnataka Rural Infrastructure Development Ltd, #280, 59th Cross Road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560010
Customer's Reference	:	BBMP/EE/BTP/WO/178/2019-20
Date of Receipt	:	24-12-19
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification , IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5 IS 4031 Part 6, Determination of Compressive Strength, Clause 6
Date of test	:	24-12-19
Environmental Conditions during test	:	Temperature: 26°C Humidity: 72%

Compressive Strength

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	3 Days	28.5N/mm^2	Not less than 27 N/mm^2
2	7 Days	39.0N/mm^2	Not less than 37 N/mm^2
3	28 Days	58.5N/mm^2	Not less than 53 N/mm^2

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TEST REPORT ON COARSE AGGREGATES

Lab ID	:	**CP-2020-01-31-91** **Date: 27-12-19**
Project Name	:	Improvements to Compound Wall and Park Developments in Ward No.05.
Agency	:	Executive Engineer, Karnataka Rural Infrastructure Development Ltd, #280, 59th Cross Road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560010
Customer's Reference	:	BBMP/EE/BTP/WO/178/2019-20
Date of Receipt	:	24-12-19
Sample Type	:	40mm down size coarse aggregate
Reference to BIS codes	:	IS: 383:2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1,3,4) RA2011 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption IS 2386 Part 4: Mechanical Properties
Date of test	:	24-12-19

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 40MM DOWN COARSE AGGREGATE:

Total weight taken : 15000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	80 mm	0	0	0.0	100	100
2	40 mm	244	244	1.6	98.4	90-100
3	20 mm	5432	5676	37.8	62.2	30-70
4	10 mm	4332	10008	66.7	33.3	10-35
5	4.75 mm	4654	14662	97.7	2.3	0-5
6	Pan	338	15000	100.0	0	---

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TEST REPORT ON COARSE AGGREGATES

Lab ID : **CP-2020-01-31-91** **Date: 27-12-19**

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	12.4	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	11.8	
3	Specific Gravity	2.68	–
4	Bulk Density(Loose) (Kg/l)	1.48	–
5	Bulk Density(Compacted) (Kg/l)	1.52	–
6	Water Absorption(%)	0.22	–

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TEST REPORT ON COARSE AGGREGATES

Lab ID	:	**CP-2020-01-31-91** **Date: 26-12-19**
Project Name	:	Improvements to Compound Wall and Park Developments in Ward No.05.
Agency	:	Executive Engineer, Karnataka Rural Infrastructure Development Ltd, #280, 59th Cross Road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560010
Customer Reference	:	BBMP/EE/BTP/WO/178/2019-20
Date of Receipt	:	24-12-19
Sample Type/ Size	:	20mm down size coarse aggregate
Reference to BIS codes	:	IS: 383:2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1,3,4) RA2011 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption IS 2386 Part 4: Mechanical Properties
Date of test	:	24-12-19

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 20MM DOWN COARSE AGGREGATE:

Total weight taken : **5000** **grams**

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	40 mm	0	0	0	100	100
2	20 mm	245	245	4.9	95.1	90-100
3	10 mm	2560	2805	56.1	43.9	25-55
4	4.75 mm	2033	4838	96.8	3.2	0-10
5	Pan	162	5000	100	0	_

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TEST REPORT ON COARSE AGGREGATES

Lab ID : **CP-2020-01-31-91** **Date: 26-12-19**

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	13.2	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	12.6	
3	Specific Gravity	2.66	–
4	Bulk Density(Loose) (Kg/l)	1.54	–
5	Bulk Density(Compacted) (Kg/l)	1.58	–
6	Water Absorption(%)	0.22	–
7	Aggregate crushing Value(%)	24.5	Max 30% for Aggregates to be used in concrete for wearing Surface, In case Aggregate Crushing Value Exceeds 30% then the test for ten percent fines should be conducted for Aggregates to be used in concrete other than for wearing Surface.
8	Aggregate Impact Value(%)	22.8	30% for Aggregates to be used in concrete for wearing Surface, 45% for Aggregates to be used in concrete other than for wearing Surface.

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Quality Manager

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TEST REPORT OF FINE AGGREGATE

Lab ID : **CP-2020-01-31-91** **Date: 26-12-19**

Project Name : Improvements to Compound Wall and Park Developments in Ward No.05.

Agency : Executive Engineer, Karnataka Rural Infrastructure Development Ltd, #280, 59th Cross Road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560010

Customer's Reference : BBMP/EE/BTP/WO/178/2019-20

Date of Receipt : 24-12-19

Sample Type : Fine Aggregate

Reference to BIS codes : IS 383 : 2016 (Specification for Coarse and fine Aggregates)
IS: 2386 :1963(Part - 1, 3) RA2012
IS 2386 Part 1: Particle Size and Shape
IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption

Date of test : 24-12-19

Total weight taken : 1000 grams

Sl.no	Sieve Size	Weight Retained (gms)	Cumulative Weight Retained (gms)	% Cumulative Weight Retained	% Passing	Requirement as per IS 383:2016			
						Grading Zone I	Grading Zone II	Grading Zone III	Grading Zone IV
1	10 mm	0	0	0.0	100.0	100	100	100	100
2	4.75 mm	27	27	2.7	97.3	90-100	90-100	90-100	95-100
3	2.36 mm	55	82	8.2	91.8	60-95	75-100	85-100	95-100
4	1.18 mm	239	321	32.1	67.9	30-70	55-90	75-100	90-100
5	600 micron	205	526	52.6	47.4	15-34	35-59	60-79	80-100
6	300 micron	203	729	72.9	27.1	5-20	8-30	12-40	15-50
7	150 micron	191	920	92.0	8.0	0-10	0-10	0-10	0-15
8	Pan	80	1000	100.0	0.0	---	---	---	---

Result :The tested Sample Conforms to Grading Zone II

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TEST REPORT OF FINE AGGREGATE

b ID : CP-2020-01-31-91 Date: 26-12-19

HYSICAL PROPERTIES

.no	Tests	Result	Requirements as per IS 383:2016
1	Water Absorption(%)	1.5	-
2	Specific Gravity	2.59	-
3	Material finer than 75 micron(%)	6.9	Uncrushed fine Aggregate Max 3%, Crushed Fine aggregate Max 15%, Mixed Fine aggregate Max 12%, Manufactured Fine aggregate Max 10%

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TEST REPORT OF CEMENT CONCRETE CUBES

Date: 03/01/2020

: **CP-2020-01-31-91**

lame : Improvements to Compound Wall and Park Developments in Ward No.05.
: Executive Engineer, Karnataka Rural Infrastructure Development Ltd, #280, 59th Cross Road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560010

r's Reference : BBMP/EE/BTP/WO/178/2019-20

Receipt : 30-12-19

r ID : RCC

Type /Size : 150X150X150 mm

grade/Age : M20 / 7 Days Compressive Strength

ce to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Test : 03/01/2020

Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
RCC	M20	27/12/2019	03/01/2020	151.92 X 149.56 X 150.89	22720	8.138	427.2	18.8	18.3
RCC	M20	27/12/2019	03/01/2020	149.83 X 150.82 X 151.62	22597	8.741	410.6	18.2	
RCC	M20	27/12/2019	03/01/2020	151.49 X 150.41 X 149.08	22786	8.758	410.2	18.0	

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TEST REPORT OF CEMENT CONCRETE CUBES

Date: 24/01/2020

: CP-2020-01-31-91

lame : Improvements to Compound Wall and Park Developments in Ward No.05.

: Executive Engineer, Karnataka Rural Infrastructure Development Ltd, #280, 59th Cross Road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560010

r's Reference : BBMP/EE/BTP/WO/178/2019-20

Receipt : 30-12-19

r ID : RCC

Type /Size : 150X150X150 mm

grade/Age : M20 / 28 Days Compressive Strength

ce to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

test : 24/01/2020

Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
RCC	M20	27/12/2019	24/01/2020	151.55 X 150.07 X 149.78	22744	8.428	529.3	23.3	22.9
RCC	M20	27/12/2019	24/01/2020	151.56 X 150.36 X 150.19	22790	8.721	512.4	22.5	
RCC	M20	27/12/2019	24/01/2020	151.77 X 151.36 X 151.68	22973	8.280	529.1	23.0	

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TEST REPORT OF PRECAST COVER SLAB

: CP-2020-01-31-91 **Date: 04-01-20**

lame : Improvements to Compound Wall and Park Developments in Ward No.05.

: Executive Engineer, Karnataka Rural Infrastructure Development Ltd, #280, 59th Cross Road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560010

r's Reference : BBMP/EE/BTP/WO/178/2019-20

leceipt : 31-12-19

ype /Size : Precast Cover Slab (100mm)

to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete

est : 31/12/2019

Identification Mark	Diameter of the core	Height of the core	Weight of the core	Area	Failure Load	Core Compressive strength	Corrected Cylinder Compressive strength	Equivalent Cube Compressive strength
	(mm)	(mm)	(kg)	(Sq.mm)	(KN)	(N/mm^2)	(N/mm^2)	(N/mm^2)
Cover Slab-1	75.51	100.48	1.115	4477	80.9	18.1	16.8	21.0
Cover Slab-2	75.49	100.52	1.150	4475	80.3	17.9	16.7	20.9
Cover Slab-3	75.50	100.51	1.161	4476	80.5	18.0	16.7	20.9

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TEST REPORT ON PHYSICAL REQUIREMENTS OF SOLID CONCRETE BLOCKS

Lab ID	:	CP-2020-01-31-91 **Date: 10-01-20**
Project Name	:	Improvements to Compound Wall and Park Developments in Ward No.05.
Agency	:	Executive Engineer, Karnataka Rural Infrastructure Development Ltd, #280, 59th Cross Road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560010
Customer's Reference	:	BBMP/EE/BTP/WO/178/2019-20
Date of Receipt	:	06-01-20
Sample Type/Size	:	Solid concrete blocks size (400X200X200)mm
Reference to BIS codes	:	IS : 2185 (Part 1) : 2005(RA 2010) Concrete Masonry Specification Part 1:Hollow and Solid Concrete Blocks (Dimensions -Annex-B, Clause 9.2 and 10 , Block density Annex -C Clause 9.3 and10, Compressive strength Annex -D Clause 9.4 and 10, Water absorption Annex -E Clause 9.5 and 10)
Date of test	:	06-01-20

BLOCK DENSITY:

Sl. No.	Measurement of overall Dimensions of Individual Blocks			Overall Volume of the Block in Cubic Centimetres	Weight of Oven Dried Block in Kilograms to the nearest 10 Gram	Block Density in Kg/cum*10^6	Avg.Block Density in (Kg/cum)	As per IS 2185(Part 1) :2005 (RA 2010)
	Length	Breadth	Height					
	mm	mm	mm	(Cm^3)	Kg	Kg/m^3	Kg/m^3	
1	399	202	200	16120	32.131	1993.3	2001.4	Not less than 1800Kg/m^3
2	401	199	199	15880	32.780	2064.2		
3	404	198	203	16238	31.610	1946.6		

WATER ABSORPTION:

Sl. No.	Wet weight after water absorption	Dry weight (Oven dry)	Water Absorption	Avg.Water Absorption	As per IS 2185(Part 1):2005 (RA 2010)
	kg	kg	%	%	
1	33.91	32.25	4.89	4.25	Shall not be more than 10% by mass
2	33.57	32.14	4.28		
3	33.44	32.24	3.59		

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b ID : CP-2020-01-31-91 Date: 10-01-20

MENSION ANALYSIS

Sl.no	Length mm	Breadth mm	Height mm	Requirement as per IS 2185(Part 1):2005
1	403	200	203	Length : ± 5mm Breadth : ± 3mm Height : ± 3mm
2	403	201	202	
3	403	202	201	
4	400	200	202	
5	402	202	203	
6	403	203	199	
7	400	201	201	
8	402	199	199	
9	399	203	203	
10	402	199	200	
11	400	200	201	
12	400	200	199	
13	404	200	199	
14	401	203	203	
15	404	201	200	
16	402	201	201	
17	404	201	200	
18	400	203	203	
19	404	200	201	
20	401	201	201	
Average of 20	402	201	201	

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ab ID : CP-2020-01-31-91

OMPRESSIVE STRENGTH:

Date: 10-01-20

Sl. No.	Size of solid block		Area	Failure Load	Compressive strength	Average Compressive strength
	Length	Breadth				
	mm	mm	(mm^2)	(KN)	N/mm^2	(N/mm^2)
1	403	200	80706	366.7	4.5	4.5
2	403	201	80849	353.7	4.4	
3	403	202	81406	358.5	4.4	
4	400	200	80128	362.3	4.5	
5	402	202	81200	373.2	4.6	
6	403	203	81703	371.1	4.5	
7	400	201	80377	380.3	4.7	
8	402	199	80057	370.7	4.6	

As per IS Requirements (Table 2, Clause 5.1, 5.2 and 9.4)

Compressive strength		
Grade	Minimum average	Minimum Individual units.
C (5.0)	5.00 N/mm^2	4.00 N/mm^2
C (4.0)	4.00 N/mm^2	3.20 N/mm^2

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Certificate No.: TC-5548

TEST REPORT OF CEMENT CONCRETE KERB STONE

Format No: CP/TF/01

Date: 18-01-20

)	:	CP-2020-01-31-91
t Name	:	Improvements to Compound Wall and Park Developments in Ward No.05.
y	:	Executive Engineer, Karnataka Rural Infrastructure Development Ltd, #280, 59th Cross Road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560010
mer's Reference	:	BBMP/EE/BTP/WO/178/2019-20
of Receipt	:	14-01-20
le Type /Size	:	CC Kerb Stone/ 450*165*400mm
ence to BIS codes	:	IS: 516 - 1959 Methods of Tests for Strength of Concrete
of test	:	14/01/2020

Identification Mark	Diameter of the core	Height of the core	Weight of the core	Area	Failure Load	Core Compressive strength	Corrected Cylinder Compressive strength	Equivalent Cube Compressive strength
	(mm)	(mm)	Kg	(Sq.mm)	(KN)	(N/mm2)	(N/mm2)	(N/mm2)
A	100.01	165.51	2.864	7854	142.1	18.1	18.1	22.6
B	100.03	165.49	2.793	7857	145.2	18.5	18.5	23.1
C	100.01	165.50	2.815	7854	145.1	18.5	18.5	23.1

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R KARTHIK RECHAN
Authorized Signatory
Quality Manager

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****End of Report****

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4, 7TH MAIN MALLESWARAM, BANGALORE -3

Certificate No.: TC-5548

CEMENT CONCRETE PRECAST CONCRETE BLOCKS FOR PAVING

Lab ID : CP-2020-01-31-91

Project Name : Improvements to Compound Wall and Park Developments in Ward No.05. **Date: 16-01-20**

Agency : Executive Engineer, Karnataka Rural Infrastructure Development Ltd, #280, 59th Cross Road, 17th 'C' Main Road, 3rd 'Y' Block, Rajajinagara, Bangalore-560010

Customer Reference : BBMP/EE/BTP/WO/178/2019-20

Date of Receipt : 11-01-20

Sample Type/ Size : Precast concrete blocks for paving

Reference to BIS codes : IS 15658:2006

Date of test : 11-01-20

1.Compressive Strength

Sl.No.	Dimension (mm)			Compressive Strength		Average	
	L	B	T	(N/mm^2)	(Kg/cm^2)	(N/mm^2)	(Kg/cm^2)
1	197.22	159.88	60.99	28.3	283	29.7	297.0
2	198.48	159.64	60.25	31.2	312		
3	199.54	159.54	60.48	29.4	294		
4	197.68	159.22	60.55	30.5	305		
5	198.11	159.87	60.32	30.4	304		
6	198.18	160.02	60.11	30.4	304		
7	198.45	158.99	60.98	28.6	286		
8	197.22	159.22	60.12	28.7	287		

2. Water Absorption

Sl.No.	Wet Weight	Dry weight	Thickness	Water Absorption (%)	Average (%)
1	4.987	4.828	60.85	3.29	3.64
2	4.898	4.721	60.22	3.75	
3	4.988	4.802	60.44	3.87	

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HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL | GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES |

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